



Random Candle Screen

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TOOLS:

- [Needle \(1\)](#)

PARTS:

- [Aluminum cans \(16\)](#)
beer/soda cans will do
- [Cable connector \(1\)](#)
- [Machine screw \(1\)](#)
- [Cardboard \(1\)](#)
or, even better, some similar fireproof material
- [Translucent paper \(1\)](#)
I used inkjet backlight print film. Film, foil, or even glass will work.
- [Wire \(1\)](#)
- [Tea light candles \(16\)](#)

SUMMARY

The Chaos Computer Club's Blinkenlights project in 2001 — which turned an office building in Berlin's Alexanderplatz into the world's biggest interactive computer display — inspired me to think and work on low-tech analog and mechanical screens.

Random Screen is a non-controllable, 4x4-pixel screen run by tea candles. Each pixel is a

5"×5" box made of cardboard, which is open at the back and closed with translucent film as a projection screen at the front. A modified beer or soda can is transformed into a kind of vent and driven by the rising heat from a tea candle, which also serves as a light source. A window is cut into the beer can, which casts the candlelight while turning at its individual frequency, like a lighthouse lantern. The brighter and bigger the candle flame, the faster the can turns to switch the designated pixel on and off. The light of each pixel fades smoothly in and out.

Step 1 — Get ready.



- First of all, have a good time and drink the beer (or soda).
- If you're planning to build several Random Screen pixels, it might be wise to invite some friends so that you don't get too wasted while preparing the materials. I used to store some beer cans in our shared office fridge, which is a very easy and quick way to get them emptied.

Step 2 — Make the pinwheel and stand.



- Cut off the top and bottom of the beer can and shorten it to 5".
- For 9-vent rotors, cut from the top in equal distances $1\frac{3}{4}$ " into the can, at an angle of 12 degrees, with shears or sharp scissors.

Step 3



- Punch a hole through each rotor near its top end, so that the tops of all rotors can be drawn together and a screw can pass up through the holes to hold them together. This part needs some patience, and be careful.
- Lock the screw in place with a nut.
- Caution: Watch your fingers! Aluminum cans have a very sharp edge when cut. Be particularly careful when gathering the rotors together.



Step 4 — Make the wire candle stand.



- Bend a simple wire stand. The base should fit around the tea candle, and the other end should be bent in and up so that the can will hang over the middle of the candle.
- Attach a needle to the end with the cable connector, checking to be sure that the pinwheel can spin easily.
- Tip: If your can doesn't hang straight, add some of the bits you cut out as counterweights. Feel free to move the materials around to make for the best fit and to maximize balance and spin.

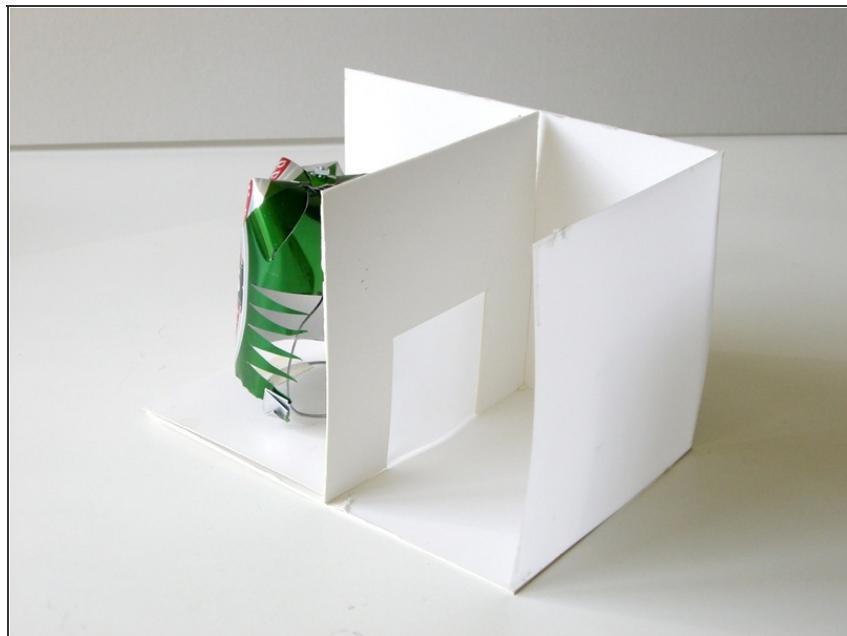


Step 5 — Cut window.



- Cut a 2"×2" window in this modified can and cut in some zigzags to make the light fade in and out smoothly.
- Run a test and place a tea candle inside to see if the can hangs straight. Make sure that the can is able to turn freely. You might have to work and bend the material a little bit.

Step 6 — Build the pixel boxes.



- Cut and/or fold the cardboard to build a $5'' \times 5''$ pixel box 7" deep.
- In order not to cast shadows or any movement onto the front pixel screen, make a middle wall inside the box to separate the back candle space 4" from the front projection space, leaving 3". A $2'' \times 2''$ window covered with the translucent film diffuses the passing light from the candle onto the main front projection screen.
- Place the stand plus modified beer can in the open back of the box. Light the candle to see if everything works.

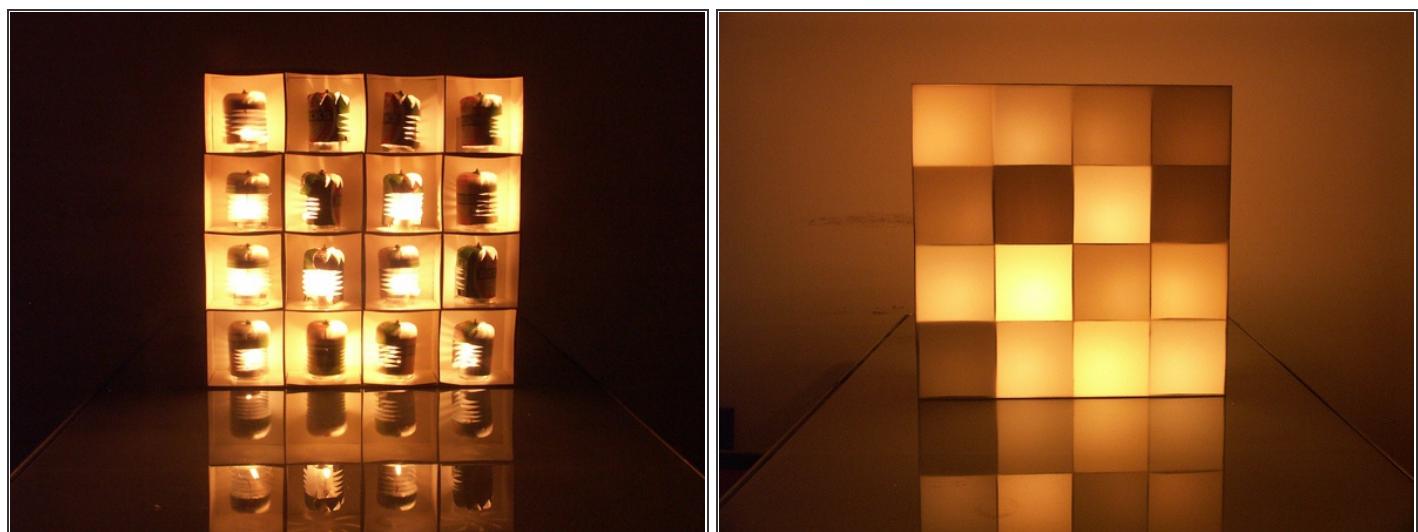
Step 7



- If you built more than one pixel, you can just stack them on top of each other.
- Of course it is also possible to build a 9- or 16-pixel Random Screen in one piece, but I like to make each pixel separately as a module you can play with.



Step 8 — Turn out the lights!



- A dark room is needed to obtain satisfying results. Light all the candles and watch your work of art flicker in the dark.
- WARNING: A 16-pixel Random Screen produces quite a bit of heat, so be careful with flammable materials and never leave it unattended. Don't burn your house down!
- Resources: <http://www.datenform.de/rscreeneng.html>



This project first appeared in [CRAFT Volume 01](#), page 150.

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